



Fact Sheet

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Project Title: Spreadsheet AERATE

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The thermal stratification that occurs at most reservoir projects can create problems with release water quality. If the hypolimnion becomes sufficiently isolated from the surface, oxygen-demanding processes in the hypolimnion can cause anaerobic conditions to develop. Many times this results in the reduction and dissolution of iron and manganese and the production of hydrogen sulfide. The withdrawal and release of this hypolimnetic water can result in low or zero dissolved oxygen (DO) concentrations in the tailwater. Additionally, the soluble iron, manganese, and hydrogen sulfide may create water quality problems downstream.

Spreadsheet AERATE presents a procedure for evaluating different reservoir aeration techniques. AERATE includes procedures to calculate the requirements for an in-reservoir aeration system using air or molecular oxygen. Also included are calculations that account for the oxygen uptake due to a turbine venting system. The diffused air/oxygen calculations can also be applied for a tailwater aeration system. Lastly, the oxygen uptake created by an overflow weir in the downstream area is included. The alternatives can also be used in combinations.

Selection of alternatives in the main menu of AERATE guides the user through the program's activities for inputting variables needed for calculations. Each of the program's menu options is described, along with the computational formulas and input variables, in Water Quality Technical Note WQTN-MS-01, *Improvement of Reservoir Releases by Aeration*.

[Download Spreadsheet AERATE](#)

Corresponding documentation: [Water Quality Technical Note WQTN-MS-01](#).